

Creating Accessibility, Usability and Privacy Requirements for the Voluntary Voting System Guidelines (VVSG)

Whitney Quesenbery
TGDC Member
Chair, Subcommittee on Human
Factors and Privacy

Design for Democracy, Inc.

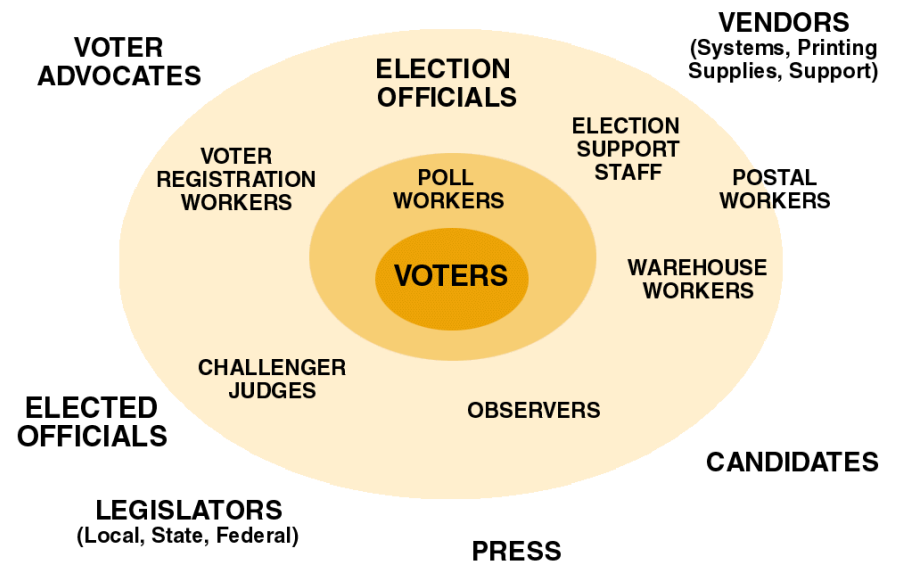


Accessibility and usability are qualities of a voting system

- Accessibility refers to the degree to which a system is **available to**, and **usable by**, **individuals with disabilities**.
- HAVA also includes **alternative language** access for **voters with limited English proficiency** as required by the Voting Rights Act.
- Usability means that voters can cast valid votes **as they intended**, quickly, **without errors**, and **with confidence** that their ballot choices were recorded correctly.
- It also concerns the **setup**, **operation** and **maintenance** of voting equipment by **poll workers** and **election officials**.

Voting systems must be usable and accessible for everyone who interacts with them

- The VVSG usability and accessibility section focuses on the voting process, and on voters.
- Future work should focus on other users:
 - Election officials
 - Poll workers



Source: UPA 2004 Voting and Usability Workshop

Language in HAVA guided our work

- That system be “accessible for individuals with disabilities, including non-visual accessibility for the blind and visually impaired, in a manner that provides the same opportunity for access and participation (including privacy and independence) as for other voters.” -- 301 (a)(3)(A)
- At least one voting system “equipped for individuals with disabilities” must be used at each polling place for federal elections held on or after January 1, 2006. -- 301 (a)(3)(B).
- And “provide alternative language accessibility as already required by section 203 of the Voting Rights Act.” -- 301 (a)(4).

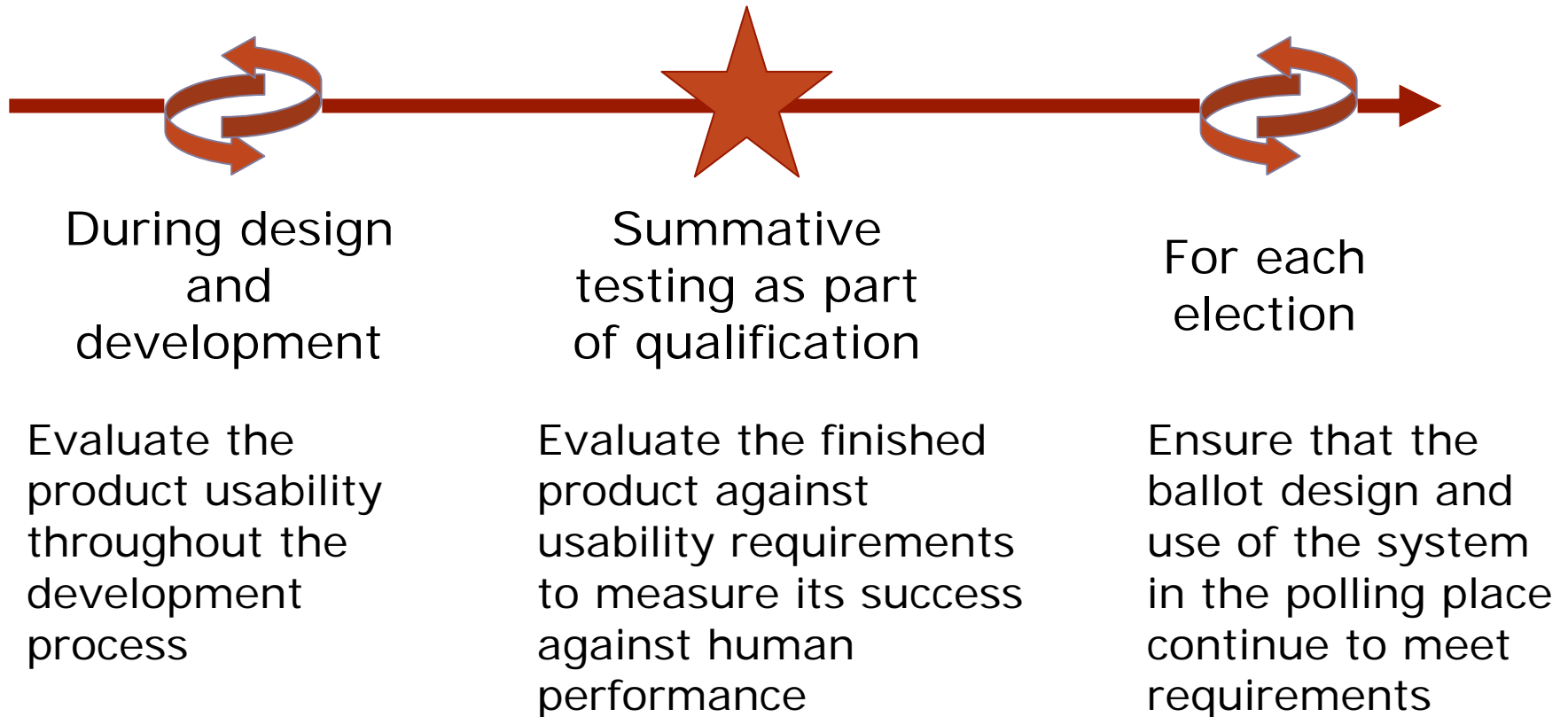
Resolutions on four key principles guided the work on accessibility, usability and privacy

- Human factors and privacy rely on both having **well designed systems**, and the effective deployment of those systems **in the polling place** (#3-05)
- Human abilities exist on a wide spectrum. Strong **universal usability** requirements make all voting systems not only **more usable**, but **accessible to more people**. (#6-05)
- Ballot design, instructions and error messages are a **critical** part of the **voting experience**. They are of particular importance for people with cognitive disabilities (#8-05)
- Setting **performance**, rather than design, **standards** will **encourage innovation** to address the complex, interlocking requirements for accessibility, functionality, security and trust. (#5-05)

Five additional resolutions directed our practical approach to human factors and privacy requirements

- **Accessibility requirements** were a top priority under HAVA (#2-05)
- Other human factors and privacy requirements cover aspects of **accurately capturing indication of a voter's choice** (#4-05)
- **All requirements** involving human interaction must ensure that basic usability, accessibility, and privacy are maintained. (#9-05)
- The **standards** themselves must be **usable**. Voting system standards should be written in **plain language** understandable by both test experts and by voting officials who are not experts in human factors or design. (#10-05)
- Voting machines must be available to validate conformance tests and establish **performance benchmarks**. (#11-05)

Usability should be part of all stages of the design process, and continue throughout use



Even the best standards have limitations.

A standard should ensure a base level of usability, accessibility, and privacy.

Good design and election procedures support and extend standard requirements

JUDICIAL RETENTION - CIRCUIT COURT
RETENCIÓN JUDICIAL - CORTE DE CIRCUITO

Candidate	YES	NO
Carol Kamin Bellows	229	231
David G. Lichtenstein	233	235
Michael J. Hogan	237	239
Alan J. Greiman	241	243
Mary Maxwell Thomas	245	247
Francis Barth	249	251
Stuart Allen Nudelman	253	255
Edward R. Burr	257	259
Kathy M. Flanagan	230	232
Curtis Heaston	234	236
Michael J. Kelly	238	240
John E. Morrissey	242	244
Ronald C. Riley	246	248
Francis X. Goliniewicz	250	252
Moshe Jacobius	254	256
Stuart F. Lubin	258	260

JUDICIAL RETENTION CIRCUIT COURT
RETENCIÓN JUDICIAL CORTE DE CIRCUITO

vote yes or no
votar si o no

YES: Retain the candidate in office as Judge of the Circuit Court, Cook County Judicial Circuit.
YES: Retenga al candidato en su puesto como Juez De La Corte De Circuito, Circuito Judicial Del Condado De Cook.

NO: Don't retain the candidate in office as Judge of the Circuit Court, Cook County Judicial Circuit.
NO: No retenga al candidato en su puesto como Juez De La Corte De Circuito, Circuito Judicial Del Condado De Cook.

Official Ballot
Boleta Oficial

Candidate	YES	NO
Carol Kamin Bellows	229	230
David G. Lichtenstein	233	234
Michael J. Hogan	237	238
Alan J. Greiman	241	242
Mary Maxwell Thomas	245	246
Francis Barth	249	250
Stuart Allen Nudelman	253	254
Edward R. Burr	257	258
Barbara J. Disko	261	262
Kathy M. Flanagan	231	232
Curtis Heaston	235	236
Michael J. Kelly	239	240
John E. Morrissey	243	244
Ronald C. Riley	247	248
Francis X. Goliniewicz	251	252
Moshe Jacobius	255	256
Stuart F. Lubin	259	260
Marvin P. Luckman	263	264

If you spoil your ballot, ask the judge for a new one.
Si usted daña su boleta, pida una boleta nueva al Juez.

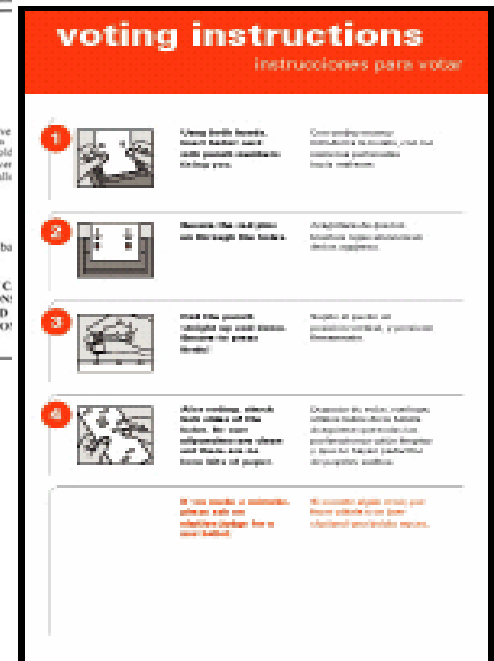
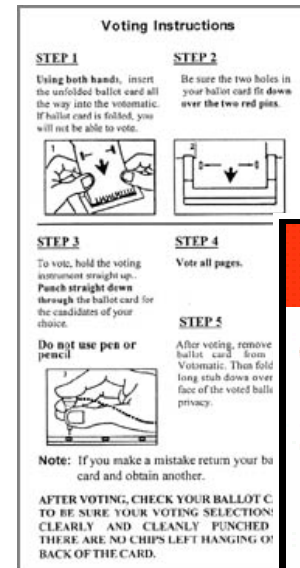
Turn page to continue voting.
Votar la pagina para continuar votando.

VVSG 2.2.7 requirements maintain or upgrade VSS 2002

- Comprehensive accessibility requirements and recommendations that point the way to future requirements
- First usability requirements for voting systems, upgraded from informative appendix
- New privacy requirements focused on the voter-equipment interface
- Other elements
 - Recommendation that vendors present report of summative usability tests for both general and accessible voting systems
 - Work to clarify ambiguous requirements and fill gaps
 - Reflect what is readily achievable with current technology.
 - Some human factors requirements in section on VVPAT

Research is currently under way at NIST to continue work on resolutions

- Usability performance benchmarks
- Plain language guidance for ballots, instructions, error messages
- Guidance for ballot design
- Usability of standards



Courtesy Design for Democracy

VVSG Section 2.2.7 includes accessibility, alternate languages, usability and privacy requirements

1. Accessibility

- 1.1 General accessibility
- 1.2 Visual
- 1.3 Dexterity
- 1.4 Mobility
- 1.5 hearing
- 1.6 speech
- 1.7 Cognitive

2. Alternate languages

3. Usability

- 3.1 Usability testing
- 3.2 Functional
- 3.3 Cognitive
- 3.4 Perceptual
- 3.5 Interaction

4. Privacy

- 4.1 Voting station configuration
- 4.2. Anonymity for alternate formats